

What is claimed is:

1. A circular saw comprising:

a table having an upper surface for placing a workpiece thereon;

a saw unit having a saw blade mounted thereon;

means for supporting said saw unit on said table such that said saw unit is movable in a horizontal direction parallel to said upper surface of said table and is movable in a vertical direction relative to said upper surface of said table; and

at least one of first lock means and second lock means, said first lock means being operable to prevent said saw unit from moving in the horizontal direction in response to the movement of said saw unit in the vertical direction, and the second lock means being operable to prevent the saw unit from moving in the vertical direction in response to the movement of said saw unit in the horizontal direction.

2. The circular saw as defined in claim 1 wherein said first lock means includes a fixing member operable to fix said saw unit in position relative to said table in the horizontal direction, an actuator for operating said fixing member, and sensor means for detecting the vertical movement of said saw unit.

3. The circular saw as defined in claim 2 wherein:

said support means includes a support arm mounted on said table,

a slide member horizontally slidable relative to said support arm,

and hinge means for vertically pivotally connecting said saw unit to said slide member; and

a 5 ^{first} said fixing member of said first lock means is operable to fix said slide member in position relative to said support arm, and said sensor means is operable to detect the vertical pivotal movement of said saw unit relative to said slide member.

4. The circular saw as defined in claim 3 wherein:

10 said slide member comprises a slide shaft slidably inserted into a holder provided on said support arm;

said fixing member comprises a screw inserted into a threaded hole formed in said holder in a direction perpendicular to an axial direction of said slide shaft, said screw having one end abutting said slide shaft; and

15 said actuator serves to rotate said screw in both clockwise and counterclockwise directions so as to move said screw toward and away from said slide shaft.

5. The circular saw as defined in claim 4 further including a dust
20 cover mounted on said holder for protecting said actuator and said screw from the outside environment.

6. The circular saw as defined in claim 4 wherein:

25 said sensor includes a detector plate mounted on one of said slide shaft and said saw unit, and an optical sensor mounted on the

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other of said slide shaft and said saw unit;

said detector plate having a plurality of parallel identification bars marked thereon, and said parallel bars being spaced from each other by a predetermined distance;

5 said optical sensor being operable to detect the movement of said parallel identification bars as a change in reflected light pattern.

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7. The circular saw as defined in claim 1 wherein said second lock means includes a fixing member operable to fix said saw unit in position relative to said table in the vertical direction, an actuator for operating said fixing member, and sensor means for detecting the horizontal movement of said saw unit.

15 8. The circular saw as defined in claim 7 wherein:

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said support means includes a support arm mounted on said table, a slide member horizontally slidable relative to said support arm, and hinge means for vertically pivotally connecting said saw unit to said slide member; and

20 said fixing member of said second lock means is operable to fix the pivotal position of said saw unit relative to said slide member, and said ^{second} sensor means is operable to detect the horizontal slide movement of said slide member relative to said support arm.

25 9. The circular saw as defined in claim 8 wherein:

said slide member comprises a slide shaft slidably inserted into a holder provided on said support arm;

said fixing member comprises a screw engaged with a threaded hole formed in said saw unit in a direction parallel to the pivotal axis of said saw unit;

said slide shaft having a flange portion that includes an abutting surface extending within a plane perpendicular to the pivotal axis of said saw unit, so that one end of said screw abuts said abutting surface of said flange portion; and

said actuator ^{rotating} ~~serves to rotate~~ said screw in both clockwise and counterclockwise directions so as to move said screw toward and away from said abutting surface.

10. The circular saw as defined in claim 9 further including a dust cover mounted on said saw unit for protecting said actuator and said screw from the outside environment.

11. The circular saw as defined in claim 9 wherein:

said ^{second} sensor means includes a plurality of parallel identification bars marked on said slide shaft and includes an optical sensor provided on said holder;

said parallel bars being spaced from each other by a predetermined distance in a longitudinal direction of said slide shaft; and

said optical sensor being operable to detect ~~the~~ movement of

said parallel identification bars as a change in a reflected light pattern.

12. The circular saw as defined in claim 1 wherein the circular saw includes both said first lock means and second lock means.

13. The circular saw as defined in claim 12 wherein:

said first lock means includes a first fixing member operable to fix said saw unit in position relative to said table in the horizontal direction, a first actuator for operating said first fixing member, and first sensor means for detecting the vertical movement of said saw unit; and

said second lock means includes a second fixing member operable to fix said saw unit in position relative to said table in the vertical direction, a second actuator for operating said second fixing member, and second sensor means for detecting the horizontal movement of said saw unit.

14. The circular saw as defined in claim 13 wherein:

said support means includes a support arm mounted on said table, a slide member horizontally slidable relative to said support arm, and hinge means for vertically pivotally connecting said saw unit to said slide member;

said first fixing member of said first lock means is operable to fix said slide member in position relative to said support arm,

and said first sensor means is operable to detect the vertical pivotal movement of said saw unit relative to said slide member; and

said second fixing member of said second lock means is operable to fix the pivotal position of said saw unit relative to said slide member, and said second sensor means is operable to detect the horizontal pivotal movement of said saw unit relative to said support arm.

15. The circular saw as defined in claim 14 wherein:

said slide member comprises a slide shaft slidably inserted into a holder provided on said support arm;

said first fixing member comprises a first screw inserted into a first threaded hole formed in said holder in a direction perpendicular to an axial direction of said slide shaft, said first screw having one end that can abut said slide shaft;

said first actuator serves to rotate said first screw in both clockwise and counterclockwise directions so as to move said first screw toward and away from said slide shaft;

said second fixing member comprises a second screw inserted into a second threaded hole formed in said saw unit in a direction parallel to the pivotal axis of said saw unit;

said slide shaft having a flange portion that includes an abutting surface extending within a plane perpendicular to the pivotal axis of said saw unit, such that one end of said second screw can abut said abutting surface of said flange portion; and

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said second actuator serves to rotate said second screw in both clockwise and counterclockwise direction³ so as to move said second screw toward and away from said abutting surface.

5 16. The circular saw as defined in claim 15 further including a first dust cover and a second dust cover, said first dust cover being mounted on said holder for protecting said first actuator and said first screw from the outside environment, and said second dust cover being mounted on said saw unit for protecting said second actuator
10 and said second screw from the outside environment.

17. The circular saw as defined in claim 15 wherein:

15 said first sensor includes a detector plate mounted on one of said slide shaft and said saw unit, and a first optical sensor mounted on the other of said slide shaft and said saw unit;

said detector plate having a plurality of first parallel identification bars marked thereon, and said first parallel bars being spaced from each other by a predetermined distance;

20 said first optical sensor being operable to detect the movement of said first parallel identification bars as a change in reflected light pattern;

said second sensor means includes a plurality of second parallel identification bars marked on said slide shaft and includes a second optical sensor provided on said holder;

25 said second parallel bars being spaced from each other by a

predetermined distance in a longitudinal direction of said slide shaft; and

said second optical sensor being operable to detect the movement of said second parallel identification bars as a change in
5 a reflected light pattern.

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